

REMARKS

Favorable reconsideration and allowance of this application are requested.

By way of the amendment instructions above, independent claim 51 has been revised in an effort to clarify the same and to further define this invention patentably over the applied references of record. As will become evident from the following discussion, all pending claims herein (i.e., claims 51-60) are suggested to be in condition for prompt allowance.

Claim 51 has been revised so as to emphasize that ***substantially all*** of the fibers are disposed in fiber bundles. Thus, substantially no individual fibers are present during mat formation, although it is recognized of course that inevitably some individual fibers may become dislodged from the bundles by virtue of the manufacturing process.¹ Support for such a revision may be found in the originally filed specification at page 11, first fully paragraph.

Prior to addressing the art-based rejections of record, it will be observed that reference to the particular type of sizing agent has been canceled from claim 60. Such cancellation is however intended to be without prejudice to such canceled sizing agents being embraced by the scope of independent claim 51. Specifically, with respect to PVOH, applicants note that in the context of the present invention, there are several factors which render the PVOH substantially insoluble. First, the bundles employed in the practice of the present invention are dried to such an extent that it takes a considerable length of time for dissolution to occur. In any event, the mats of the present invention are most preferably formed by a foam process so there is really very little liquid present in the foam bubbles, whereby dissolution does not take place very rapidly. And finally, the PVOH may in fact be cross-linked to render it insoluble per se. Thus, while PVOH and epoxy resin have been deleted from claim 60, such sizing

¹ The term "substantially all" must therefore be interpreted in light of the specification.

agents are nonetheless still embraced within the scope of the present invention as defined by independent claim 51.

Claims 51-57 attracted a rejection under 35 USC §103(a) as allegedly "obvious" from Hannes et al (USP 4,112,174) in view of Weeks (USP 5,409,573). Helwig et al (USP 6,054,022) has been combined with such references to reject claims 58-59 under 35 USC §103(a), while Hannes et al has been cited alone to reject claim 60.²

Applicants note that in the specification text on pages 10 and 11, there is taught that "poor quality" glass tissue is used for base material for roof coverings. This is precisely what the applied Hannes et al references teaches since they disclose their product must have a certain amount of monofilaments – i.e., individual fibers. In contrast, the mats of the present invention have substantially no individual fibers, but instead substantially all fibers are disposed in fiber bundles.

There is a clear difference in objective as between the present invention and the applied Hannes et al reference. That is, the primary goal of Hannes et al is to have between 5 to 30% of the fibers in the bundles, whereas applicants disclose that substantially all (e.g., at least 60%) of the fibers should be in bundles. Moreover, a careful review of Hannes at column 2, lines 51-54; column 3, lines 11-15 and column 3, lines 25-26 reveal that the Hannes et al product must have both monofilament (individual) fibers and fiber bundles. Later on in column 4, starting at line 31, Hannes et al discuss what kind of bundles is needed and what percentage thereof should be in the final product. Hannes et al teach on line 43 that insoluble binder is used to keep the fibers in the bundle though exposed to water in the slurry.

While Hannes et al do mention at column 4, line 56 that a very broad range of fibers in bundles may be from 5 to 90%, it is also noted that high amounts of fiber

² It is believed that the amendments to claim 60 renders moot this rejection. Accordingly, since claim 60 is dependent from claim 51 it will be assumed herein that addressing the substantive inappropriateness of the combination of Hannes et al and Weeks as applied against claims 51-57 will likewise address any issue against claim 60 in that regard.

bundles actually result in detrimental effects being realized in the product. However, the very next following passage in Hannes et al teach that the preferred range of fibers in bundles is 5 to 30%.

Moreover, at the passage bridging columns 6 and 7, Hannes et al disclose that testing of samples having 0-25% of fibers in bundles resulted in the graphical presentation of FIG. 3. The data in FIG. 3 reveals that, according to Hannes et al, the tear resistance of the sample would not materially improve at fiber bundle percentages greater than 25%. And, as noted above, Hannes et al actually teach that higher levels of such fiber bundles are disadvantageous to the product due to their making it "overly dense and non-uniform" (column 4, lines 63-65). As a result, Hannes et al clearly teach directly away from a mat product whereby **substantially all** fibers are disposed in fiber bundles as in the present invention.

The secondary reference to Weeks must therefore be viewed against the backdrop of Hannes et al provided by the discussion above. Thus, it should now be clear that Weeks does not cure at all the deficiencies of Hannes et al. Thus, the fact that Weeks may disclose of incorporating staple thermoplastic fibers in combination with glass fibers does not in any way direct an ordinarily skilled person to the invention claimed herein.

Applicants note again that Weeks discusses fiber **dispersion** (not bundles) where "wet chop glass strand consisting of bundles of numerous aligned glass fibers adhered with a sizing agent, with thermoplastic resin particles in the form of fine denier, short cut wettable staple fibers" are co-dispersed (column 1, lines 65-68). Thus, the entire purpose of Weeks is to **disperse** the fiber bundles, whereby the final product has little if any fiber bundles. The Examiner's attention is directed, for example, to column 2, lines 51-58, "**dispersion** of the fiber bundles is greatly enhanced"; column 3, lines 9-10, "glass and thermoplastic fibers are **dispersed** in water", and column 4, lines 22-26; column 4, lines 45-55, where the entire dispersion process is described. The rate of

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dispersion is discussed at column 7, lines 32-33, where it is noted that the remaining bundles, if they can even be called as bundles contain only a few fibers.

Weeks therefore is in the first instance totally inconsistent with Hannes et al since the latter at least desires to have some small amount of bundles. Clearly, Weeks does not cure the glaring deficiencies of Hannes et al as discussed previously.


Finally, with regard to Helwig, applicants again note that in column 6 thereof, it is disclosed "sufficient time must be allowed for the sizing to wash off the fibers". Furthermore, on line 13 of column 6 of Helwig, it is stated that the composition of the sizing has an effect on said 'washing-off' time. In other words, the sizing of Helwig is such that it can be washed off, and as a result, the sizing **cannot** be "substantially water insoluble" (i.e., survive the process so as to maintain the fibers in bundles) as required by the claims pending herein. Simply stated, the entire passage in Helwig speaks to the ability of sizing to be physically removed from the fibers. Thus, Helwig et al fails to render obvious the present invention as defined by claims 58 and 59 in combination with the Hannes et al and Weeks references.

Withdrawal of all rejections is therefore believed to be in order. Such favorable action is solicited.

Respectfully submitted,

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